CONVERSION KIT

installation & service manual



DATA EAST USA, INC.
470 Needles Drive
San Jose, CA 95112

780-0052-00

WARNING

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instructions manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device persuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

FBI

WARNING

Federal law provides severe civil and criminal penalties for the unauthorized reproduction, distribution, or exhibition of copyrighted audiovisual works and video games.

The Federal Bureau of Investigation investigates allegations of criminal copyright infringement.

KID NIKI-RADICAL NINJA

INSTALLATION AND SERVICE MANUAL

CONVERSION KIT MODEL NUMBER 1US27K

TABLE OF CONTENTS

470 NEEDLES DR.
SAN JOSE, CA. 95112
(408) 286-7074

1. GENERAL INFORMATION

a. Warnings & service information.

FCC WARNING:

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COPYRIGHT NOTICE:

REPLACEMENT PARTS AND SERVICE:

To obtain replacement parts or technical assistance, contact the Data East distributor in your area. If you require further technical assistance, you may contact Data East's Service department during the hours of 8:00 a.m. to 5:00 p.m. Pacific time at (408) 286-7074.

b. Warranty information.

DATA EAST LIMITED WARRANTY

Data East USA, Inc., ("Seller"), warrants only to the initial purchaser of its products that the items listed below are free from defects in material and workmanship under normal use and service for the warranty period specified:

Printed Circuit Boards (game logic) 90 days

No other parts of Seller's product are warranted.

Warranty periods are effective from initial date of shipment from Seller to its authorized distributors.

Seller's sole liability shall be, at its option, to repair or replace products which are returned to Seller during the warranty periods specified, provided:

1. Seller is notified promptly upon discovery by purchaser that stated products are defective.
2. Such products are properly packaged and then returned freight prepaid, to Seller's plant.

This warranty does not apply to any parts damaged during shipment and/or due to improper handling, or due to improper installation or usage, or alteration. In no event shall the Seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages or any other losses incurred by the customer in connection with the purchase of a Data East USA, Inc., product.

WARRANTY DISCLAIMER

EXCEPT AS SPECIFICALLY PROVIDED IN A WRITTEN CONTRACT BETWEEN SELLER AND PURCHASER, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

c. Checking your kit.

Your Data East conversion kit contains all of the components required for installation in most color upright video game cabinets. Before beginning, check the contents of your conversion kit for the following materials:

(1)	Kid Niki pcb set	510-0095-00
(1)	EMI filter PCB, Irem to Deco	520-0087-00
(1)	Main harness, conversion kit	036-0013-01
(1)	Marquee plex, Kid Niki	830-0029-00
(1)	Monitor underlay card, Kid Niki	810-0020-00
(1)	Control panel overlay, generic kit	800-0021-01
(2)	Side decal, generic kit	820-0036-00
(1)	Joystick assy, 4/8 way	450-0009-00
(2)	Pushbutton assy, Black	350-0016-00
(2)	Pushbutton assy, Yellow	350-0016-04
(2)	Pushbutton assy, White	350-0016-09
(1)	Installation & Service manual	780-0052-00
(1)	FCC Warning Label	406-0003-00

Verify that your kit is complete before going further.

d. General conversion requirements.

This Data East conversion kit is designed to be installed into an existing video game cabinet. All necessary components and graphics have been supplied to make the results of this conversion look and play like a new upright game. There are several requirements to consider when selecting a game to convert. They are as follows:

MONITOR: RGB, NEGATIVE COMPOSITE SYNC, HORIZONTALLY MOUNTED

POWER SUPPLY: + 5 VOLTS AT A MINIMUM OF 7 AMPERES.
(Kid Niki pcb set draws 4.6 amps)

+ 12 VOLTS AT A MINIMUM OF 1 AMPERE.
(Kid Niki pcb set draws .79 amps nominal)

When selecting a game to convert, make sure that the coin acceptors are functional, the monitor and power supply work well, and the cabinet is structurely sound. There is nothing more frustrating then installing a new conversion kit and discovering that it will not come up due to a faulty monitor or power supply. I know...the first thing you will suspect is the new Logic PCB, right? Save yourself some time and money by making sure the original game works before you install a kit.

It it mandatory that the cabinet be wired to conform with all National and Local Electrical Code requirements before the conversion is attempted. The system must have adequate noise filtering on the AC line to prevent unwanted conducted radio frequency interference. Adequate is defined as a filter having both common mode and differential mode filtering with a current capacity of at least 1 1/2 amperes.

According to the FCC and/or other regulatory agencies, every video game must be clearly labeled with the name and address of the Original Manufacturer, Date of Manufacture (or serial number), Voltage Rating, Current Rating, Suitability for indoor or outdoor use, and Model Number. In addition, the FCC requires that after conversion, the unit must be labeled with a suitable warning stating that radio frequency interference may result from use in a residential area. An acceptable warning sticker is included in your kit.

IT IS THE RESPONSIBILITY OF THE PERSON PERFORMING THE CONVERSION TO COMPLY WITH ALL LABELING REQUIREMENTS.

2. SPECIFIC INFORMATION

A. Self test information.

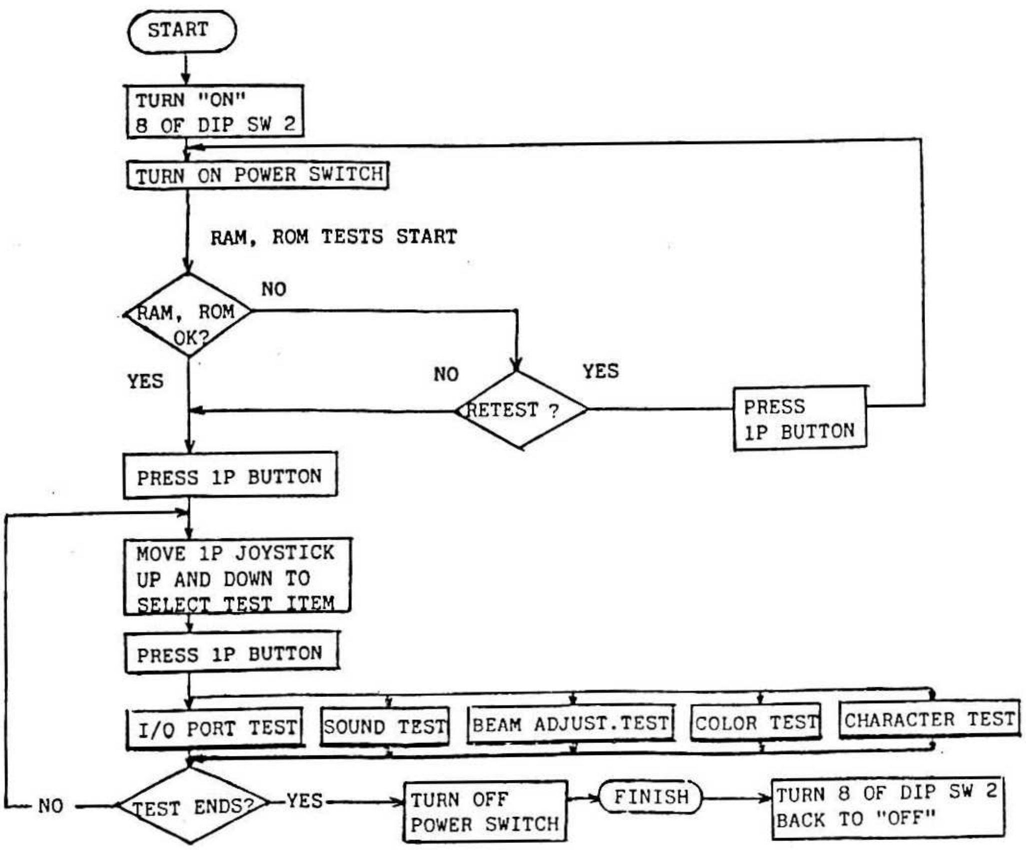
The Kid Niki game has a self test mode that checks out the system hardware. To enable this test, switch number 8 on Dipswitch 2 to the "ON" position and apply power to the game. The following tests will appear on the screen:

1 RAM test
2 ROM test
3 I/O Port test
4 DIP Switch test
5 Sound test
6 Character test
7 Color test
8 Beam adjustment test

As soon as power is applied with the Test Mode selected, tests 1 and 2 are started. Use the 1 Player joystick up/down directions to select test item from the menu and the 1 Player Start button to begin test.

To return to the attract mode, remove power, switch number 8 of Dip-switch 2 to the "OFF" position, and apply power once again.

TEST PROCEDURES:



B. Sound volume adjustment.

The sound volume level is adjustable by turning the potentiomenter VR1 on the main logic pcb (see figure 1) until the desired volume level is attained.

C. Operator selectable options.

The Kid Niki game contains operator selectable coinage, bonus, etc. These options are accessed by the two 8 position dipswitches located on the main logic pcb (see figure 1). The following tables outline the available options.

DIPSWITCH 1			1	2	3	4	5	6	7	8
NUMBER OF LIVES		THREE:	OFF	OFF						
		TWO:	ON	OFF						
		FOUR:	OFF	ON						
		FIVE:	ON	ON						
DIFFICULTY		NORMAL:			OFF					
		HARD:			ON					
EXTRA LIFE GIVEN AT:		50000 PTS:				OFF				
		80000 PTS:				ON				
COIN MODE 2	COIN A	1 COIN=1 PLAY:					OFF	OFF		
		2 COIN=1 PLAY:					ON	OFF		
		3 COIN=1 PLAY:					OFF	ON		
		5 COIN=1 PLAY:					ON	ON		
SW3 OF DIPSW 2 ON	COIN B	1 COIN=2 PLAY:							OFF	OFF
		1 COIN=3 PLAY:							ON	OFF
		1 COIN=5 PLAY:							OFF	ON
		1 COIN=6 PLAY:							ON	ON
COIN MODE 1		1 COIN=1 PLAY:					OFF	OFF	OFF	OFF
		2 COIN=1 PLAY:					ON	OFF	OFF	OFF
		3 COIN=1 PLAY:					OFF	ON	OFF	OFF
		4 COIN=1 PLAY:					ON	ON	OFF	OFF
		5 COIN=1 PLAY:					OFF	OFF	ON	OFF
		6 COIN=1 PLAY:					ON	OFF	ON	OFF
SW3 OF DIPSW 2 OFF		1 COIN=2 PLAY:					OFF	ON	ON	OFF
		1 COIN=3 PLAY:					ON	ON	ON	OFF
		1 COIN=4 PLAY:					OFF	OFF	OFF	ON
		1 COIN=5 PLAY:					ON	OFF	OFF	ON
		1 COIN=6 PLAY:					OFF	ON	OFF	ON
		2 COIN=3 PLAY:					ON	ON	OFF	ON
		3 COIN=2 PLAY:					OFF	OFF	ON	ON
		5 COIN=3 PLAY:					ON	OFF	ON	ON
		8 COIN=3 PLAY:					OFF	ON	ON	ON
		FREE PLAY:					ON	ON	ON	ON

DIPSWITCH 2		1	2	3	4	5	6	7	8
FLIP PICTURE	NO:	OFF							
	YES:	ON							
CABINET TYPE	TABLE:		OFF						
	UPRIGHT:		ON						
COIN MODE	MODE 1:			OFF					
	MODE 2:			ON					
GAME	NO:				OFF				
REPETITION	YES:				ON				
CONTINUE MODE	YES:					OFF			
(BUY-IN)	NO:					ON			
FREEZE PICTURE	NO:						OFF		
MODE	YES:						ON		
NO DEATH MODE	NO:							OFF	
	YES:							ON	
DIAGNOSTIC TEST	NO:								OFF
MODE	YES:								ON

NOTE:

1. SELECT COIN MODE 1 FOR GAMES WITH ONE COIN SELECTOR OR IF TWO COIN SELECTORS WITH THE SAME COIN/CREDIT VALUES ARE DESIRED.

2. SELECT COIN MODE 2 IF TWO COIN SELECTORS OF DIFFERENT COIN/CREDIT VALUES ARE DESIRED.

3. TO ACTIVATE FREEZE PICTURE MODE, SWITCH 6 OF DIPSWITCH 2 ON. THE GAME WILL PLAY NORMALLY. TO FREEZE PICTURE, PRESS 2 PLAYER START BUTTON. TO CONTINUE, PRESS 1 PLAYER START BUTTON.

4. GAME REPETITION ALLOWS THE GAME PLAY TO WRAP AROUND TO THE BEGINNING WHEN ALL SCENES ARE COMPLETED. DISABLE TO STOP GAME AT END.

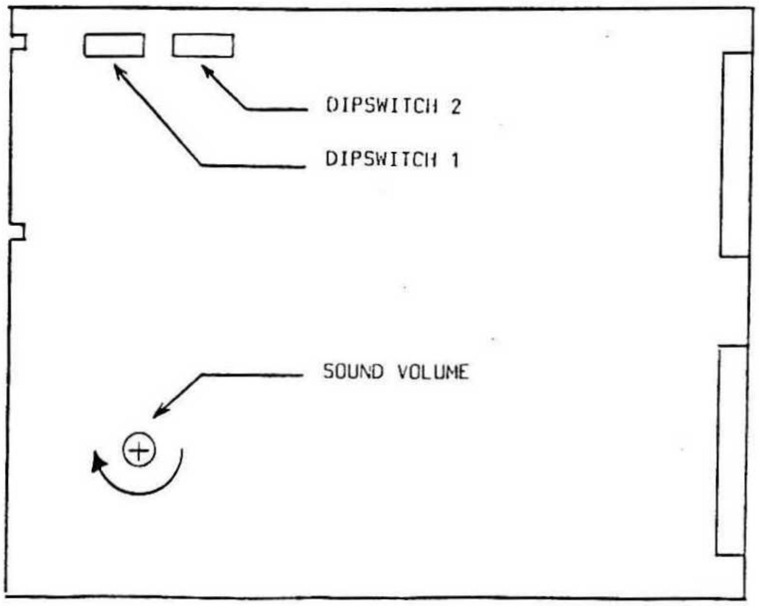


FIGURE 1

4. INSTALLATION INSTRUCTIONS

a. Conversion preparations.

Performing a few simple tasks when preparing a game to be converted can save you much time and effort when you are installing the conversion kit. This section will cover the basic procedures to follow when preparing your game.

FIND THE WIRING DIAGRAM FOR THE GAME TO BE CONVERTED! You will need to identify the required DC power supply output wires, and the monitor video and sync wires. Note the color coding of these wires or better yet, label each one as to their function. This conversion kit contains a new Main Harness, but you may need to splice into the existing power supply and monitor wires.

Remove the existing game harnesses that will not be utilized in the final conversion. NOTE: This conversion kit only requires modification of the secondary (DC from power supply) and I/O (control panel and coin) sections of the original wiring. DO NOT REMOVE OR MODIFY THE PRIMARY AC WIRING. The primary AC wiring has been designed and built to UL and FCC regulations and must not be modified.

Remove the existing game logic boards. Remove all decals and/or paint over existing cabinet graphics. Repair any cabinet damage.

Remove the monitor plex (or glass). If your plex has silkscreened artwork on it, you will need to strip it off or replace with a clear plex cut to the same size. Use your original plex as a template when cutting the new Underlay Card down to size.

Remove the marquee plex. Use this plex as a template when cutting the new Marquee plex down to size.

Remove the control panel from the cabinet and strip it down. The game is now ready to be converted!

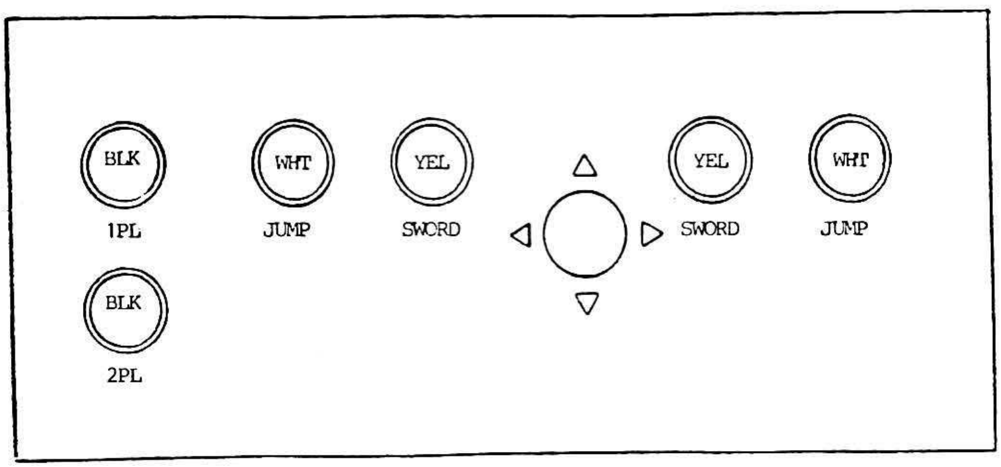


FIGURE 2

b. Installation procedures.

Control Panel: This is never any fun, so lets do it first and get it out of the way. Examine the suggested control panel layout drawing (fig. 2) and see what holes you will have to add and/or plug.

Install the control panel overlay by peeling off the paper backing and carefully lowering it down on to the panel. Smooth it out starting from the center and work your way out to the edges, removing all of the trapped air pockets. Using a sharp blade, cut out all of the required holes and mount the controls as shown in the layout drawing (fig. 2). Mount the completed control panel to the cabinet.

PCB Set: Mount the Kid Niki pcb set into the cabinet. We recommend mounting the pcb to a side wall to allow for adequate convection cooling. Plug the EMI Filter pcb onto the logic pcb's edge connector.

Power Supply Wiring: Plug the Main Harness onto the edge connector of the EMI Filter pcb and route the power supply wires neatly to the power supply. For best results, these wires should be routed in such a way as to keep the overall length to a minimum. Use a minimum of two (2) wires EACH for the +5 volt and Ground wires from the Power Supply to the pcb set. The +12 volt wire is not critical, one (1) wire is adequate. Terminate these wires as required.

WARNING: IMPROPER WIRING WILL CAUSE SUBSTANTIAL DAMAGE TO THE PCB SET AND VOID YOUR WARRANTY!

Player Control Wiring: Route the player control wires to their proper destinations, cut to proper length, and terminate as required. See Specific Wiring Information for hook up details.

Monitor Wiring: As mentioned in the Conversion Requirements, this pcb set outputs NEGATIVE COMPOSITE SYNC to the monitor. If your monitor does not support Composite Sync, hook the Sync wire to the negative Horizontal Sync input. This method will work on most monitors, however some Electrohome models require that Sync be tied to both the negative Horizontal and negative Vertical inputs for proper operation. Contact your distributor if you are uncertain as to the proper hook up procedures for your monitor.

Coin Counter(s): The Coin Counter(s) can be 5 volt or 12 volt units as the pcb set utilizes an Open Collector output driver circuit. See Specific Wiring Information for hook up details.

Graphics: Install the Underlay Card. This card will rest directly under the clear monitor plex (or glass). Mount the new Marquee Plex in place at this time. Apply the side decals, being careful to remove all air pockets. MANDATORY: Install the FCC warning label to the back of the cabinet to complete the installation procedures!

The Big Test: Before applying power to the game, verify that the wiring is correct.

DISCONNECT THE HARNESS EDGE CONNECTOR NOW!

With the harness edge connector disconnected, apply power and measure the +5 volt level in respect to ground AT THE EDGE CONNECTOR OF THE MAIN HARNESS WITH A DIGITAL MULTI-METER. Refer to the edge connector pinout on page 12. Adjust the power supply to get a 5.2 volt reading at this point. Check the +12 volt level and the -5 volt (-5 volts may not be required) level in the same manner. REMOVE POWER FROM THE GAME AND WAIT 2 MINUTES FOR THE POWER SUPPLY TO DISCHARGE.

RE-INSTALL THE HARNESS EDGE CONNECTOR NOW!

Apply power to the game. The game's attract mode video should appear on the screen. Examine the video for correct appearance. Adjust the controls on the monitor to get the optimum picture possible.

Well, coin it up and play it! Check for proper controls, video, and sound.

C. Edge connector pin-out

The Kid Niki pcb has a 44 pin edge connector. Data East supplies a suitable EMI filter pcb with each game to make the game comply with FCC regulations and adapt to the Data East harness pin-out configuration.

Note that the pin-out configurations are quite different and under no circumstances should the harness edge connector be plugged directly on to the Kid Niki logic pcb.

The diagram below represents the IREM pin-out used on the actual game pcb, the one on page 12 is the Data East type harness pin-out used on the EMI filter pcb.

IREM EDGE CONNECTOR PIN-OUT

KID NIKI PCB EDGE CONNECTOR, CN-3

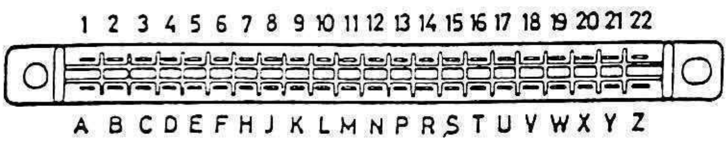
COMPONENT SIDE	PIN NUMBER		SOLDER SIDE
GROUND	1	2	GROUND
GROUND	3	4	GROUND
	5	6	
COIN COUNTER A	7	8	
1P CONTROL LEFT	9	10	2P CONTROL LEFT
1P CONTROL RIGHT	11	12	2P CONTROL RIGHT
1P CONTROL PUSH 1	13	14	2P CONTROL PUSH 1
1 PLAYER START	15	16	2 PLAYER START
	17	18	COIN COUNTER B
COIN SWITCH B	19	20	VIDEO SYNC
+ 12 VOLTS	21	22	+ 12 VOLTS
+ 12 VOLT	23	24	+ 12 VOLTS
SPEAKER (-)	25	26	SPEAKER (+)
1P CONTROL PUSH 2	27	28	2P CONTROL PUSH 2
VIDEO RED	29	30	VIDEO GREEN
VIDEO BLUE	31	32	
2P CONTROL UP	33	34	2P CONTROL DOWN
1P CONTROL UP	35	36	1P CONTROL DOWN
SERVICE SWITCH	37	38	COIN SWITCH A
+ 5 VOLTS	39	40	+ 5 VOLTS
+ 5 VOLTS	41	42	+ 5 VOLTS
GROUND	43	44	GROUND

DATA EAST EDGE CONNECTOR PIN-OUT

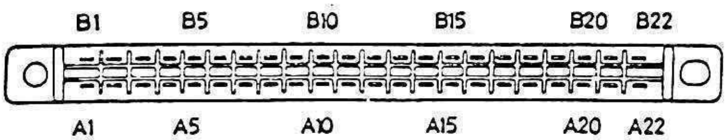
HARNESS CONNECTOR, EMI FILTER PCB

SOLDER SIDE	PIN NUMBERS		COMPONENT SIDE
2P CONTROL 2 DOWN	A	1	1P CONTROL 2 DOWN
2P CONTROL 1 UP	B	2	1P CONTROL 1 UP
2P CONTROL 3 LEFT	C	3	1P CONTROL 3 LEFT
2P CONTROL 4 RIGHT	D	4	1P CONTROL 4 RIGHT
2P CONTROL 7 PUSH 3	E	5	1P CONTROL 7 PUSH 3
	F	6	
	H	7	
TEST SWITCH	J	8	SERVICE SWITCH
2P CONTROL 5 PUSH 1	K	9	1P CONTROL 5 PUSH 1
2P CONTROL 6 PUSH 2	L	10	1P CONTROL 6 PUSH 2
2P START SWITCH	M	11	1P START SWITCH
COIN SWITCH 2	N	12	COIN SWITCH 1
COIN COUNTER 2	P	13	COIN COUNTER 1
VIDEO GREEN	R	14	VIDEO BLUE
VIDEO SYNC	S	15	VIDEO RED
	T	16	
SPEAKER (-)	U	17	SPEAKER (+)
- 5 VOLTS	V	18	+ 12 VOLTS
+ 5 VOLTS	W	19	+ 5 VOLTS
+ 5 VOLTS	X	20	+ 5 VOLTS
GROUND	Y	21	GROUND
GROUND	Z	22	GROUND

EDGE CONNECTOR TERMINAL NUMBERING:

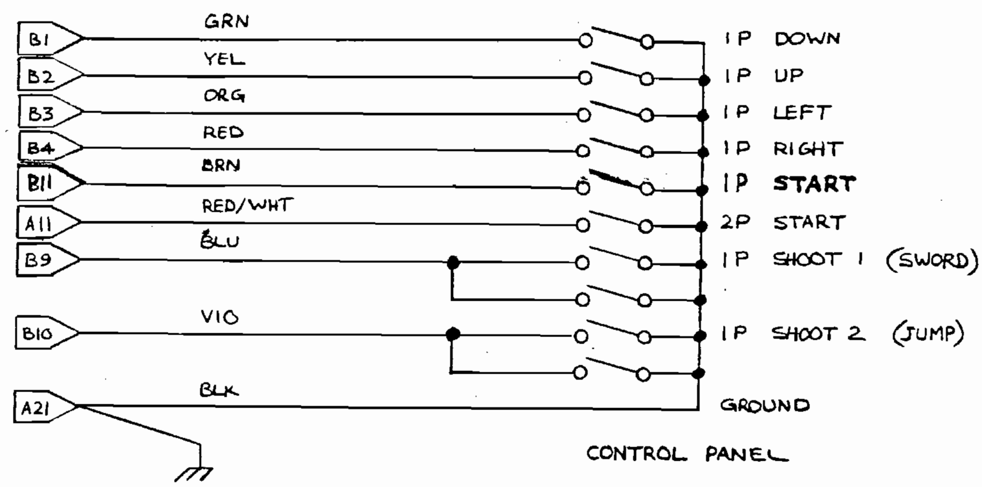


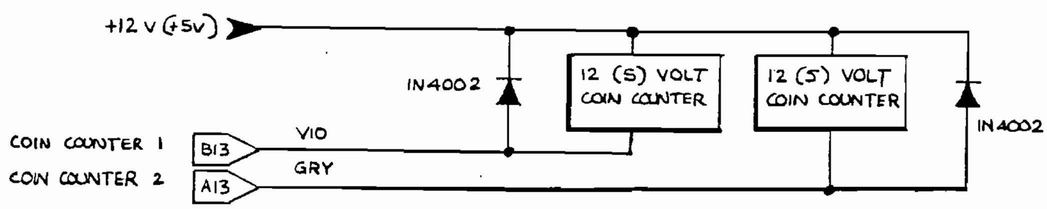
CONNECTOR CR7E-44DA-3.96 E (HIROSE)

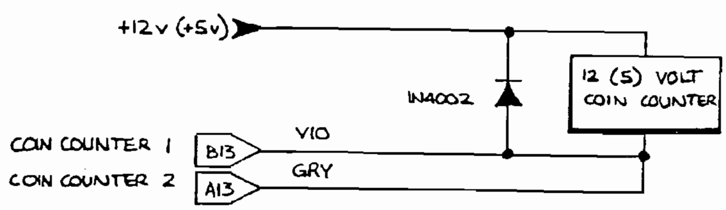


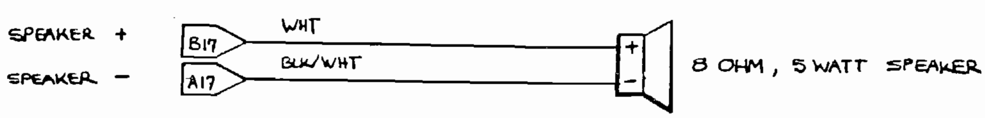
CONNECTOR 1168-044-009 (KEL)

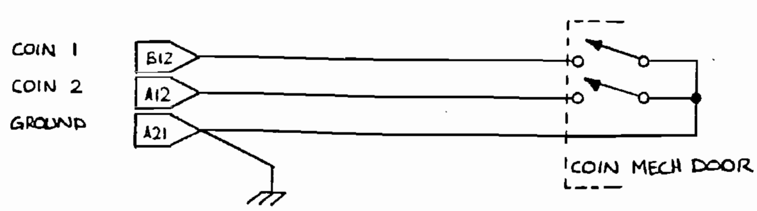
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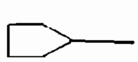




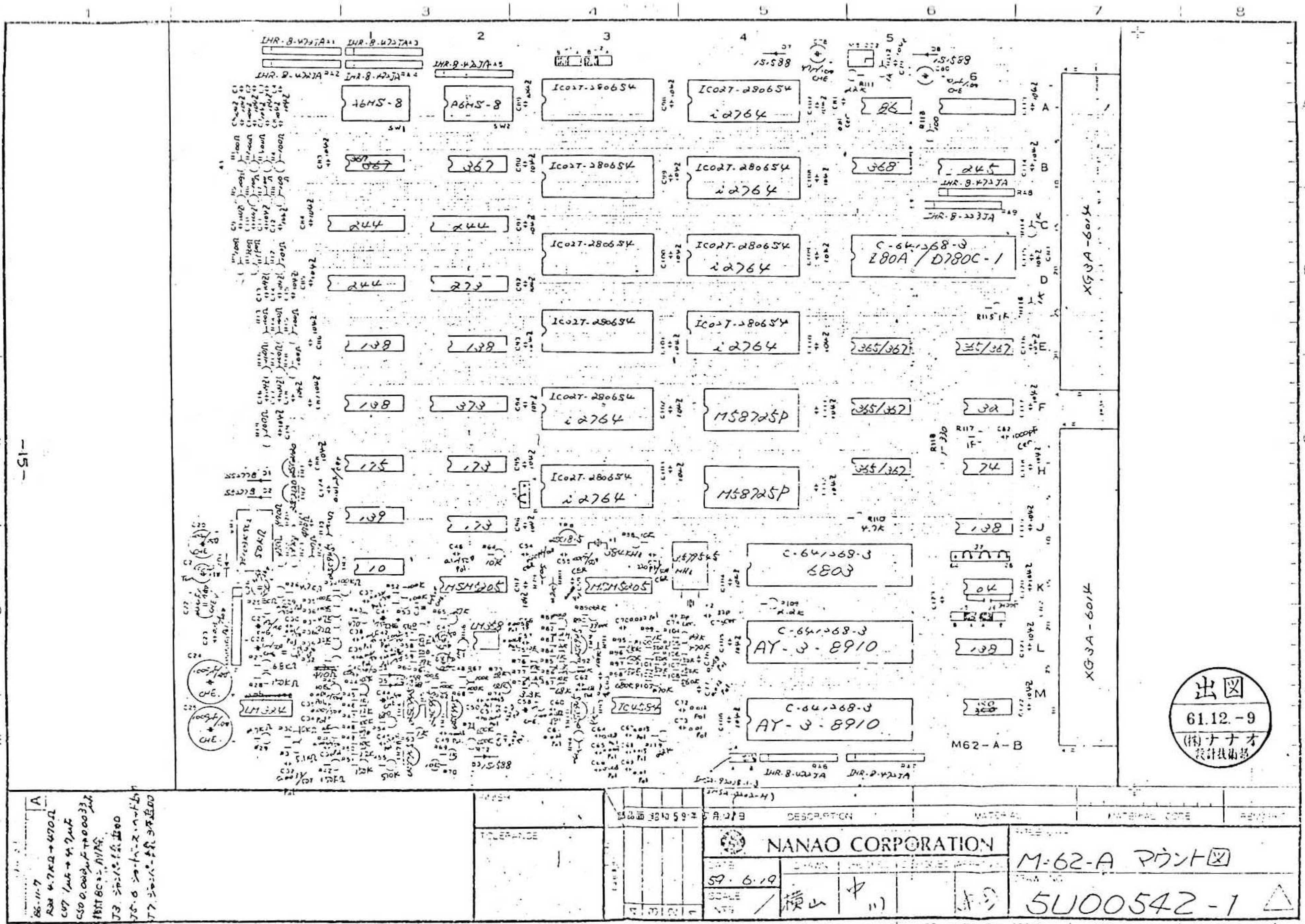




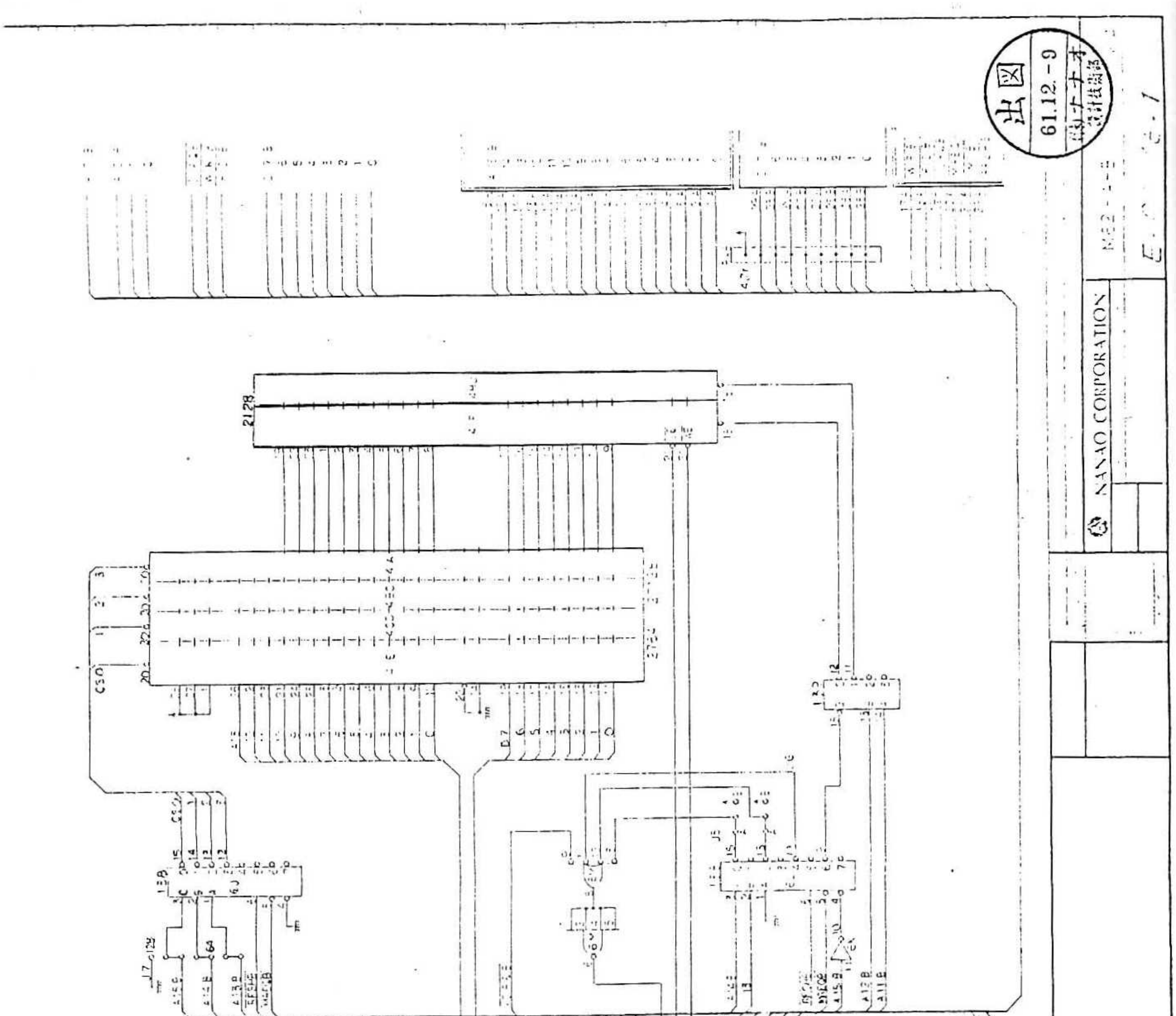


 = EMI FILTER PCB EDGE CONNECTER

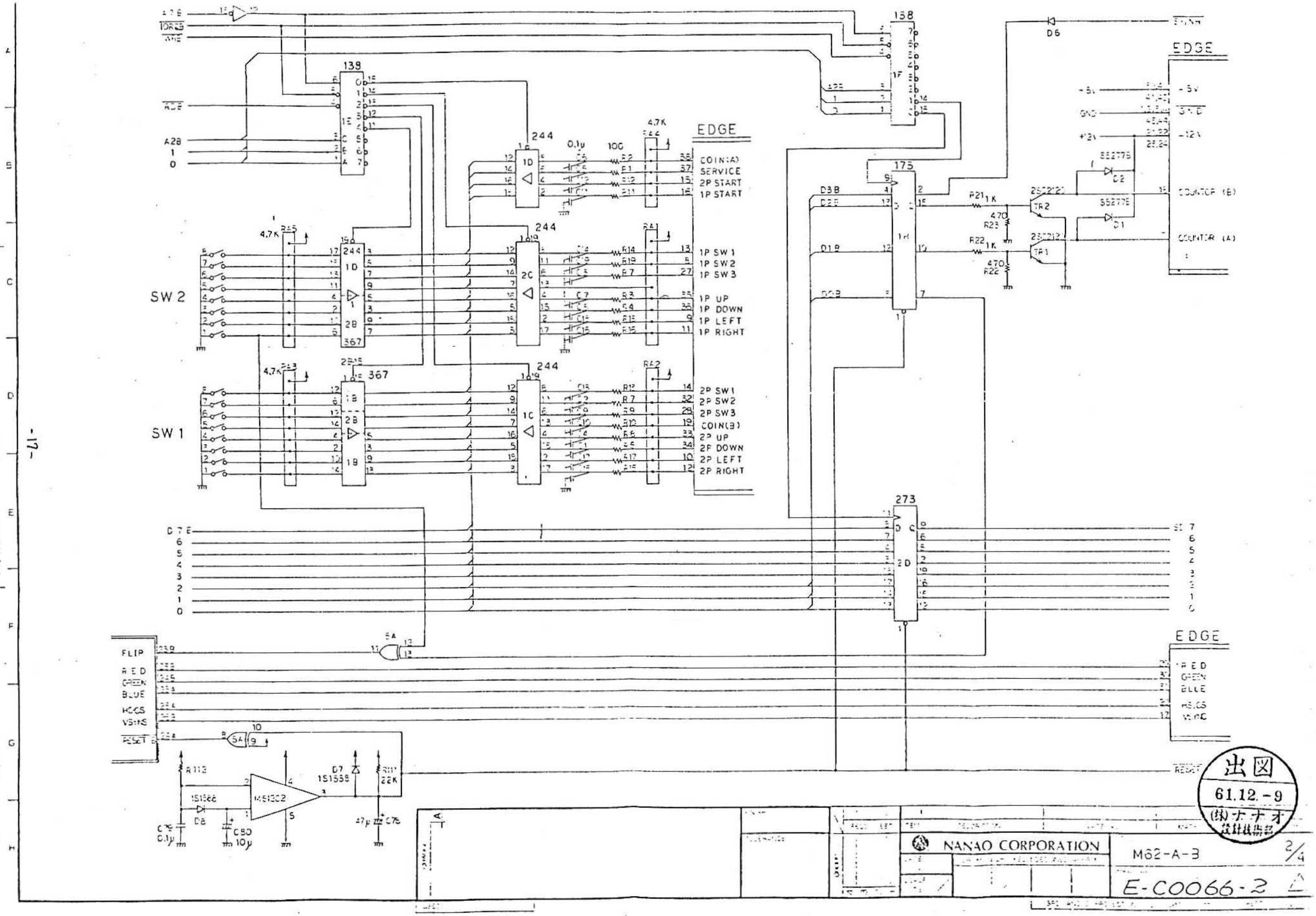
5. PCB SCHEMATICS

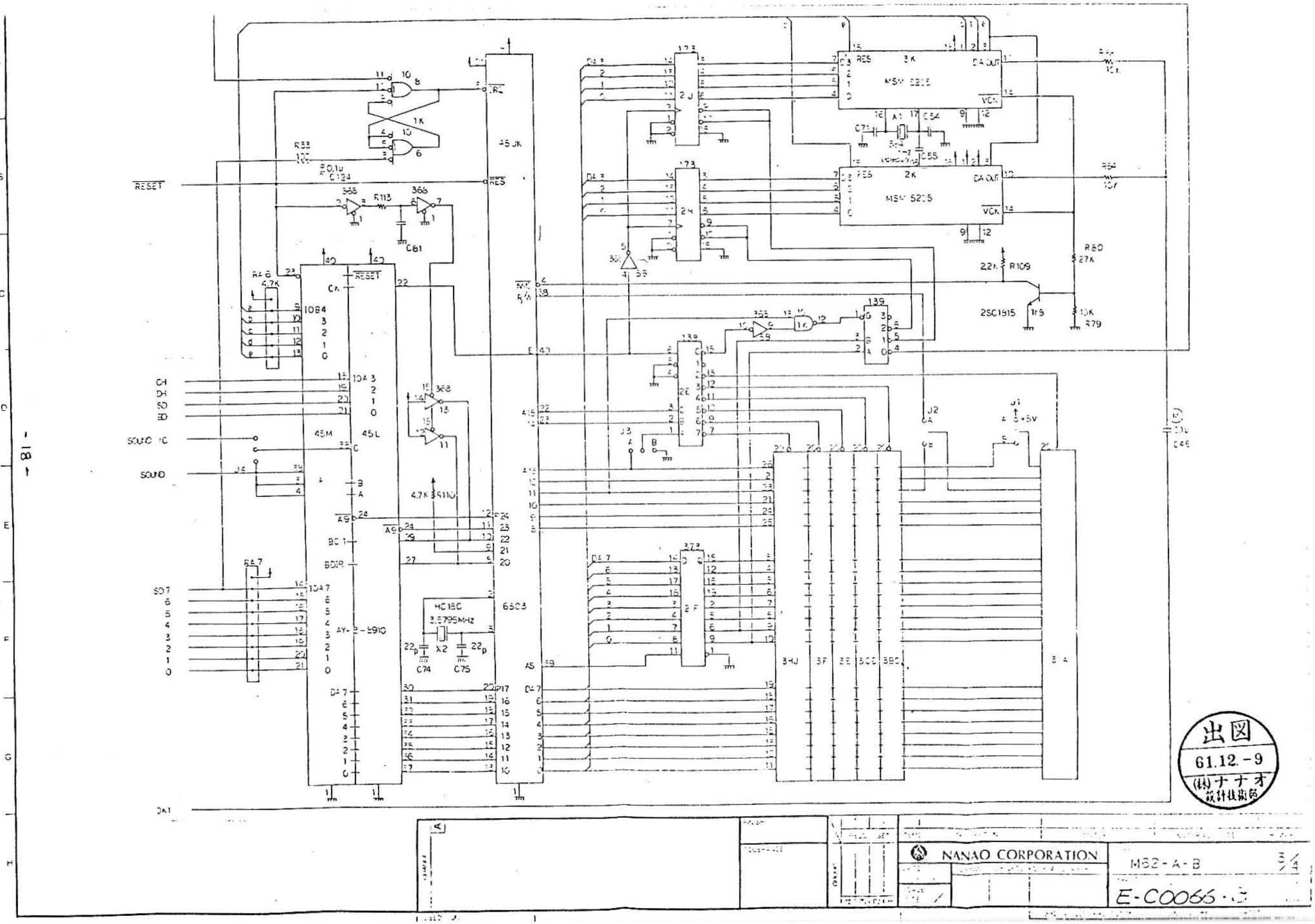


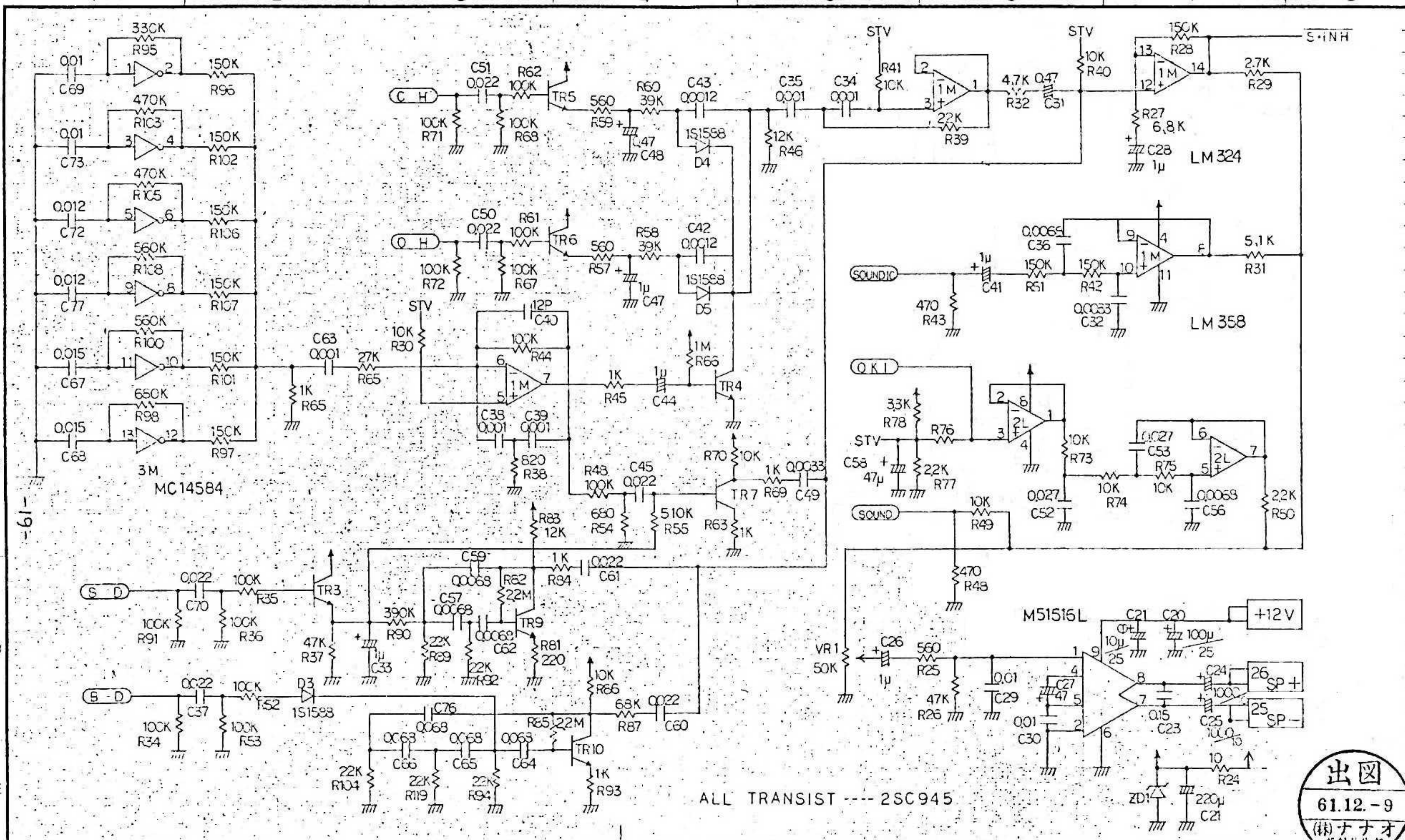
XG3A-601K
XG3A-601K
C-64/368-3
Z80A / D780C-1
C-64/368-3
6803
C-64/368-3
AY-3-8910
C-64/368-3
AY-3-8910
IC027-280654
i2764
M58725P
M58725P
A6HS-8
A6HS-8
SW1
SW2
MSM5205
MSM5205
LM358
LM324
M62-A-B
出図
61.12.-9
(株)ナナオ
設計技術部
NANAO CORPORATION
DATE
59. 6. 19
SCALE
NTS
横山
中川
M-62-A マウント図
5U00542-1
A
61.11.7
R34 4.7KΩ→470Ω
C47 1μF→4.7μF
C50 0.022μF→0.0033μF
IBIT8Cに加算
J3 ジャンパー線 追加
J5.6 ショートパーツ.カット
J7 ジャンパー線 追加
DESCRIPTION
MATERIAL
TOLERANCE



NANAO CORPORATION
61.12.-9
2128
357/365
357/365
Z-80
CN1
CN2
RESET
NMI


EDGE
COIN(A)
SERVICE
2P START
1P START
1P SW1
1P SW2
1P SW3
1P UP
1P DOWN
1P LEFT
1P RIGHT
2P SW1
2P SW2
2P SW3
COIN(B)
2P UP
2P DOWN
2P LEFT
2P RIGHT
SW2
SW1
FLIP
RED
GREEN
BLUE
COUNTOR (B)
COUNTOR (A)
出図
61.12.-9
(株)ナナオ
NANAO CORPORATION
M62-A-3
2/4
E-C0066-2


RESET
CH
DH
SD
BD
SOUND IC
SOUND
SD7
6
5
4
3
2
1
0
MSM 5205
6803
AY-3-8910
2SC1515
HC18C
3.5795MHz
NANAO CORPORATION
M62-A-B
E-C0065
出図
61.12.-9
(株)ナナオ
設計技術部
3/4



NANAO CORPORATION

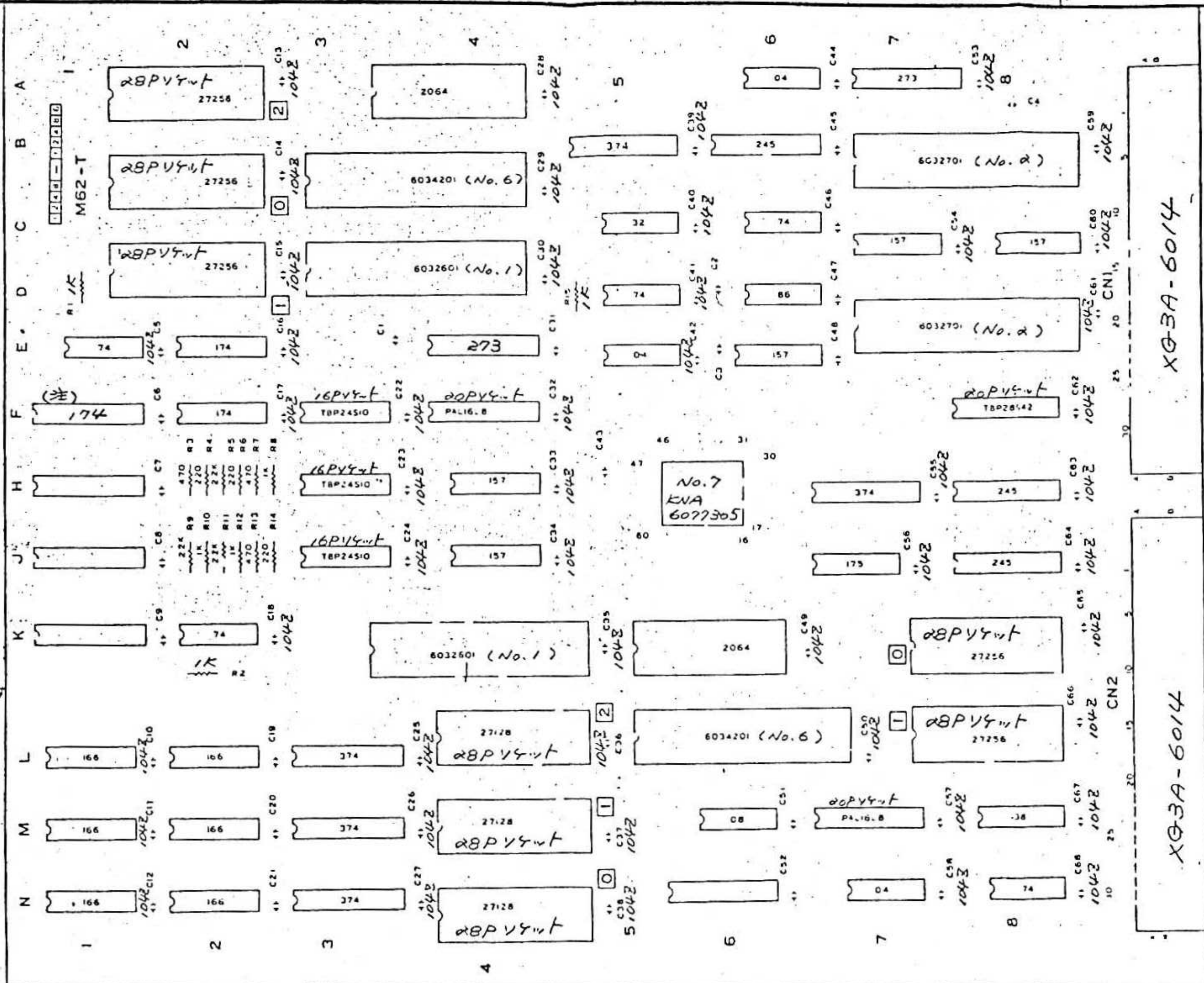
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DRAW NO.: E-C0066-4

SHEET: 4/4

3RD ANGLE PROJECTION

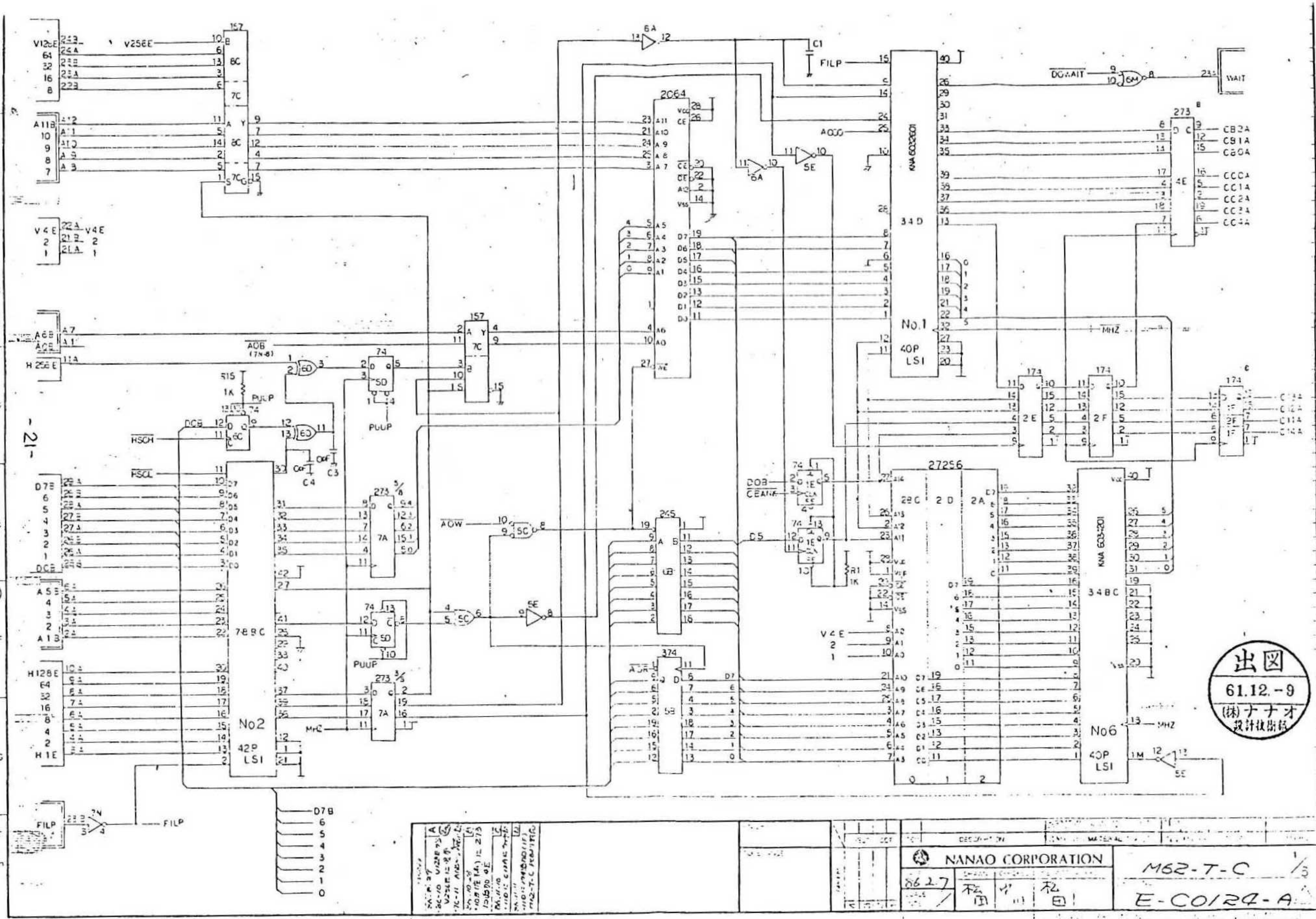
UDS
UDK-α
I.H.K
控

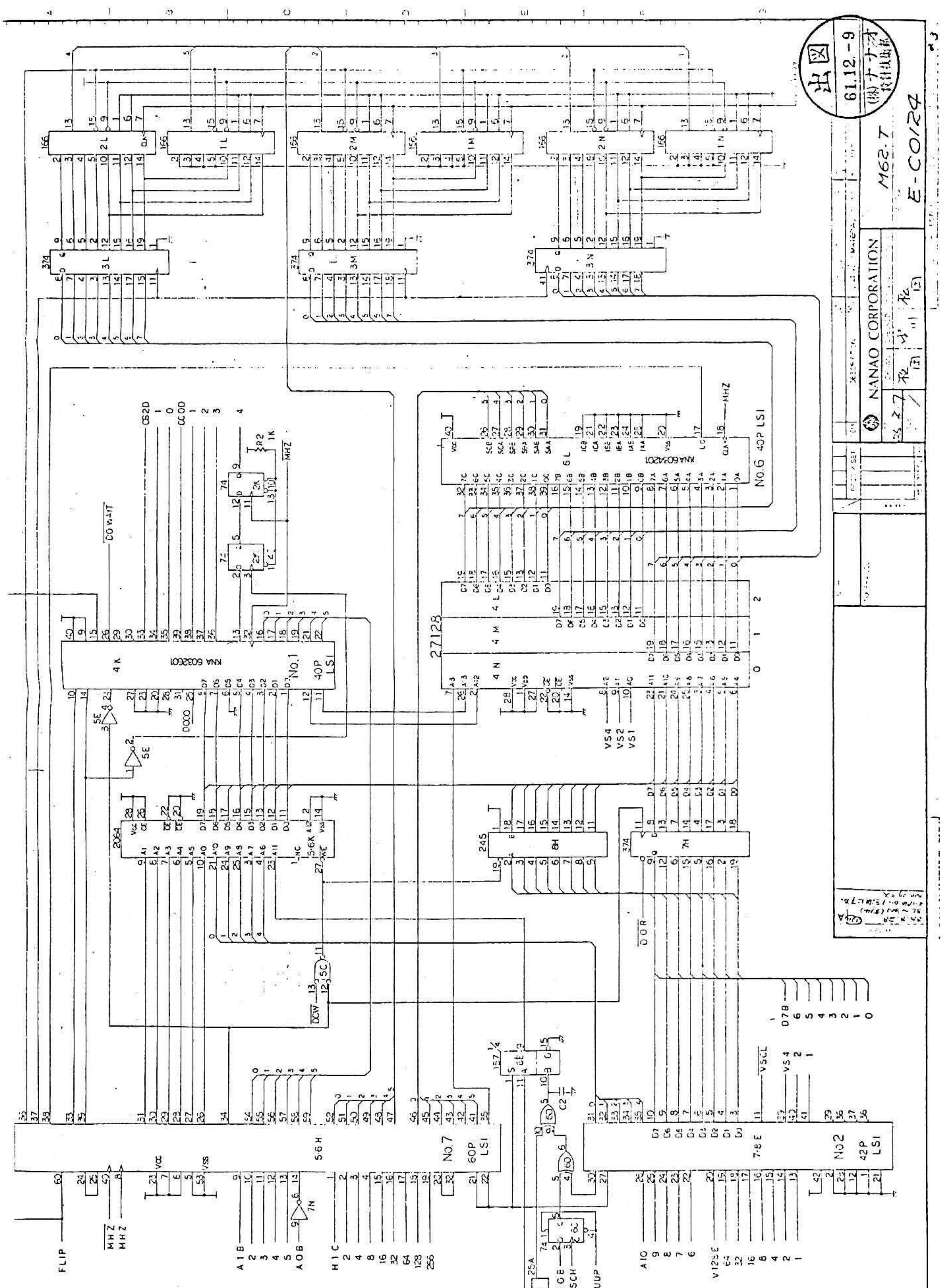


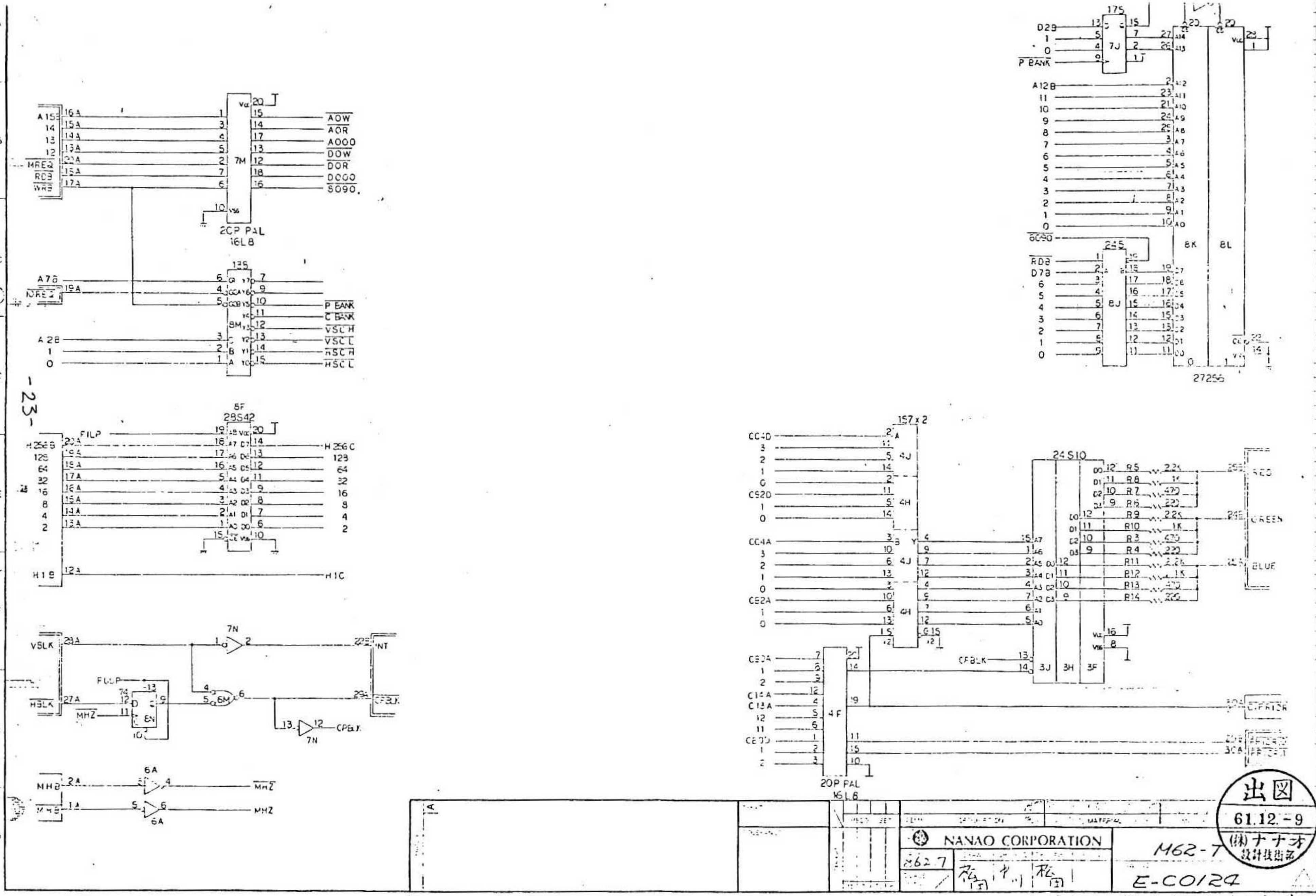
(注)
1Fの LS174のICは
M62-T-C版以降に
取り付けて下さい。

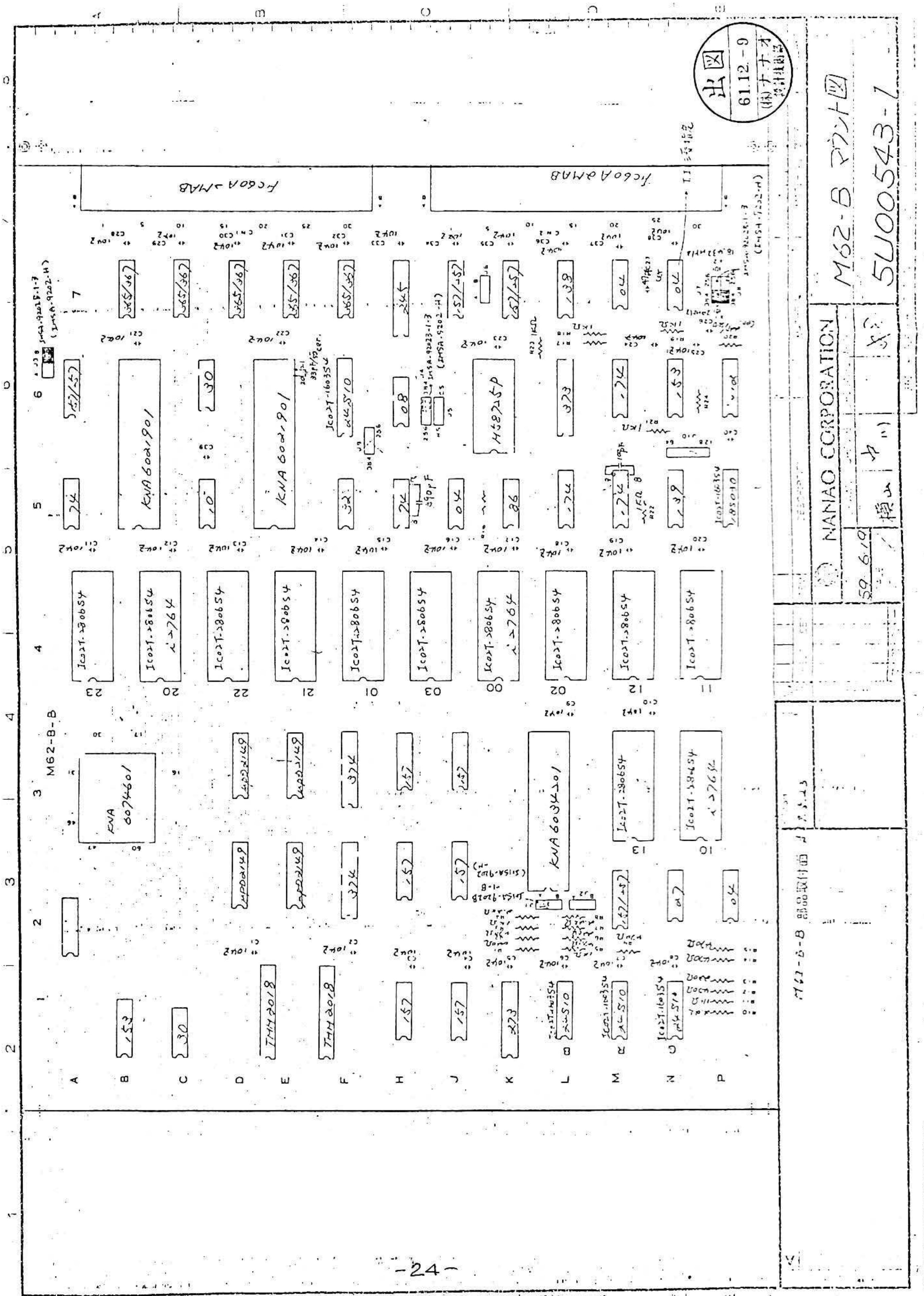
NANAO CORP. ST.
TYPE K301-D

FINISH	
TOLERANCE	
ITEM	DESCRIPTION
NANAO NANAO CORPORATION	TITLE: M62-T マウント図
DATE: 61.10.27	DRAWN: 横山
SCALE: NTS	CHECKED: 古田
	DESIGNED: 古田
	DRAW NO: 5U01193
3RD ANGLE PROJECTION	DIM IN mm
SHEET	/
USED ON	

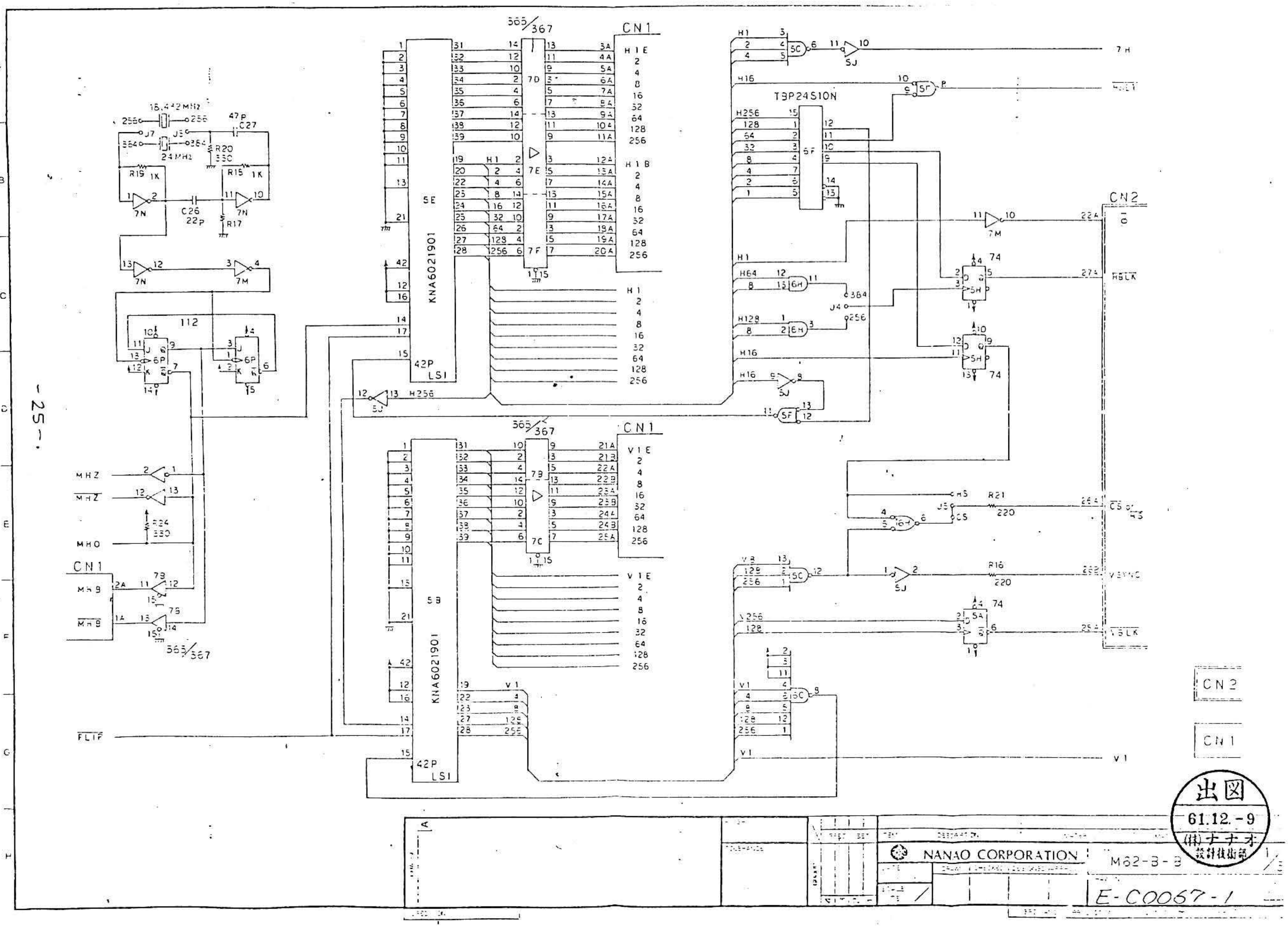

NANAO CORPORATION
M62-T-C
1/5
E-C0124-A
出図
61.12.-9
(株)ナナオ
設計技術部
No.1
40P LSI
KNA 6032601
34D
No2
42P LSI
789C
No6
40P LSI
KNA 603-1201
34BC
27256
2064

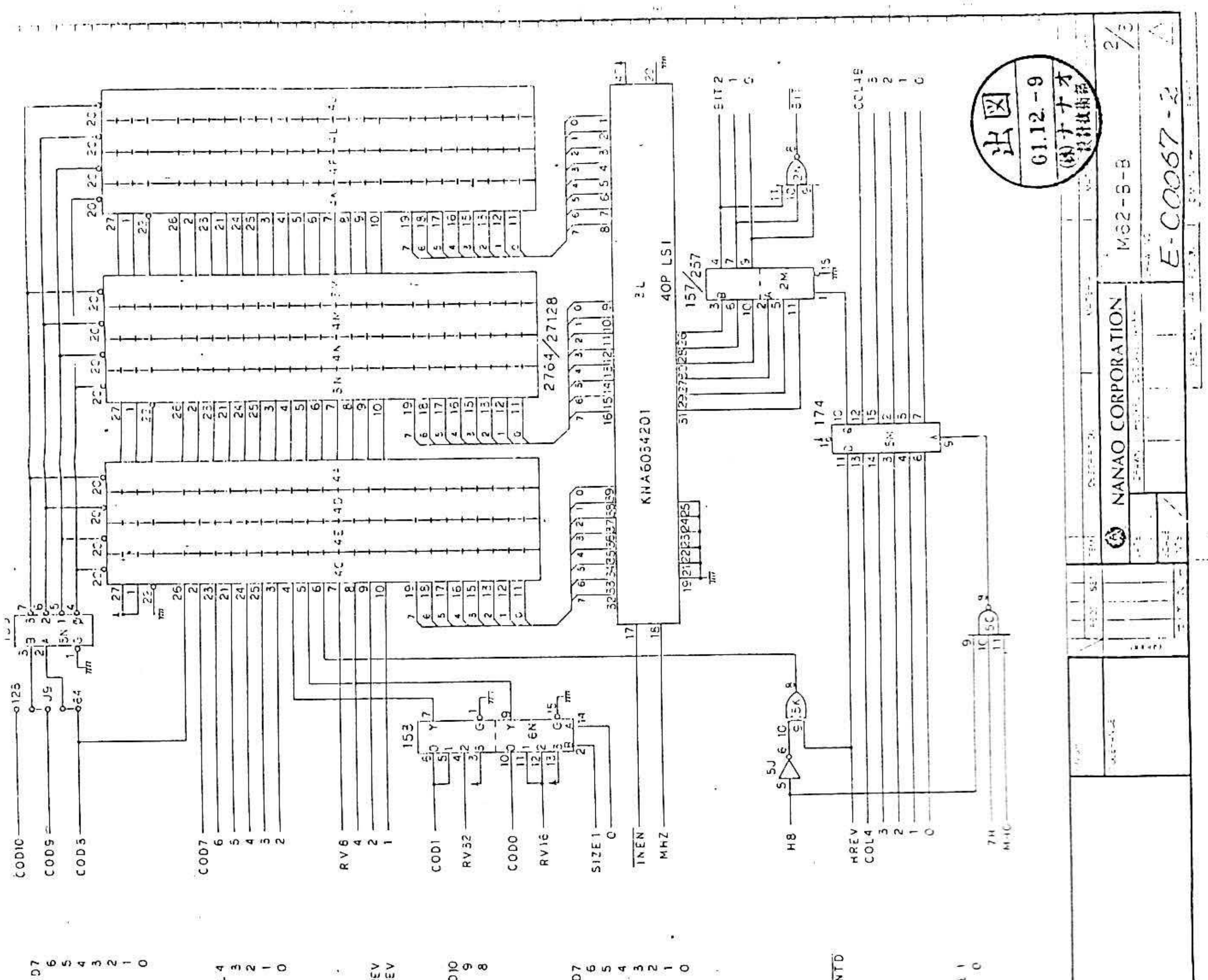

NANAO CORPORATION
M62.T
E-C0124
61.12.-9

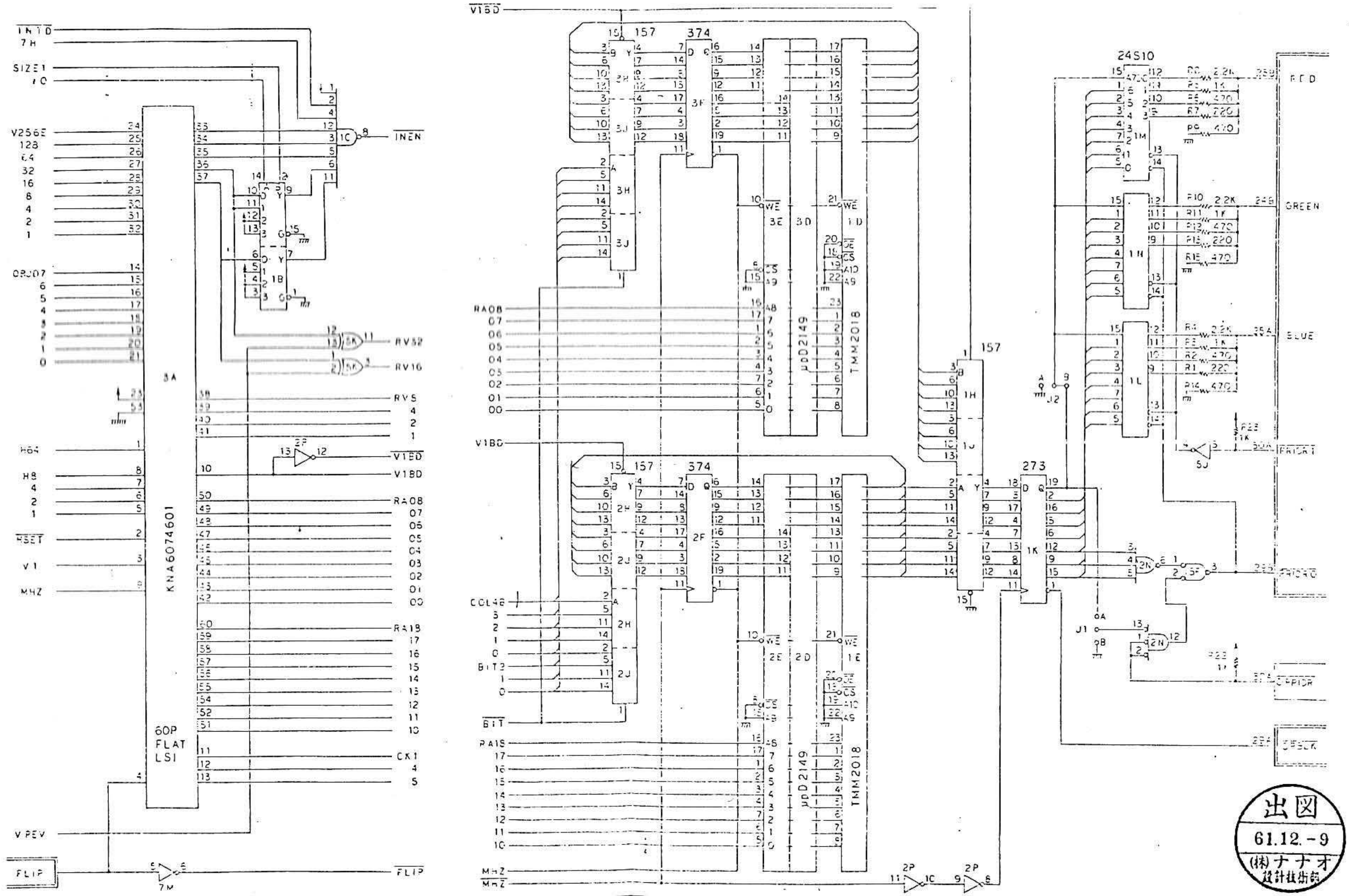

2CP PAL
16L8
7M
A15B
14
13
12
MREQ
RDB
WRB
AOW
AOR
A000
DOW
DOR
D0G0
S090
135
8M
A7B
IOREQ
A2B
1
0
P BANK
C BANK
VSCH
VSCL
HSCH
HSCL
5F
28S42
FILP
H256B
128
64
32
16
8
4
2
H256C
H1B
H1C
VBLK
HBLK
MHZ
7N
6M
INT
CPBLK
6A
MHB
MHZ
175
7J
D2B
P BANK
A12B
11
10
9
8
7
6
5
4
3
2
1
0
S090
245
8J
RDB
D7B
8K
8L
27256
157 x 2
4J
4H
CC4D
CS2D
CC4A
CS2A
24S10
3J
3H
3F
R5
R8
R7
R6
R9
R10
R3
R4
R11
R12
R13
R14
RED
GREEN
BLUE
CFBLK
20P PAL
16L8
4F
C14A
C13A
NANAO CORPORATION
M62-7
E-C0124
出図
61.12.-9
(株)ナナオ
設計技術部



NANAO CORPORATION
M62-B マウント図
5U00543-1
出図 61.12.-9 (株)ナナオ
M62-B-B


KNA6021901
5E
5B
42P LSI
TBP24S10N
365/367
CN1
CN2
H1E
H1B
V1E
7H
HBLK
VSYNC
VBLK
CS or HS
V1
FLIP
MHZ
MHO
MH9
18.432MHz
24MHz
NANAO CORPORATION
M62-B-B
E-C0067-1
出図
61.12.-9
(株)ナナオ
設計技術部


NANAO CORPORATION
M82-5-8
E-C0057-2
2/3
出図
61.12-9
KNA6034201
40P LSI
2764/27128
STATIK RAM
2K×8



出図
61.12.-9
(株)ナナオ
設計技術部

NANAO CORPORATION

M62-B-B

3/3

E-C0068-3